

REMARKS/ARGUMENTS

Claims 1-19, 27 and 29-33 remain cancelled.

No new matter is added.

The obviousness rejection of Claims 20-26, 28 and 34-41 as being unpatentable in view of Fischer and Woodbury is respectfully traversed because 1) the cited references, either alone or in combination, do not describe or suggest all of the features of present Claims 20, 28, 34 and the claims depending therefrom; and 2) on the basis of a superior and unexpected result.

Present Claim 20 is drawn to a process for preparing 3-cyano-3,5,5-trimethylcyclohexanone (isophoronenitrile). The process comprises reacting isophorone with hydrogen cyanide in the presence of a base as a catalyst to form a crude isophoronenitrile product, and subsequently distilling the crude isophoronenitrile product to prepare the isophoronenitrile. The base is selected from the group consisting of an alkali metal cyanide, an alkaline earth metal cyanide, an alkali metal hydroxide, an alkaline earth metal hydroxide, an alkali metal oxide, an alkaline earth metal oxide, an alkali metal alcoholate and an alkaline earth metal alcoholate; before the distilling, at least one sulfonic acid is added such that the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur; and the at least one sulfonic acid is selected from the group consisting of methanesulfonic acid, a naphthalenesulfonic acid, an alkyl-substituted naphthalenesulfonic acid, an alkyl-substituted benzenesulfonic acid having an alkyl radical having greater than or equal to 4 carbon atoms, and combinations thereof.

Thus, in present Claim 20, the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur. Similarly, in present Claim 28, drawn to a process for preparing 3-cyano-3,5,5- trimethylcyclohexane (isophoronenitrile),

“the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur.” And in present Claim 34, drawn to a method for avoiding precipitates in the neutralization of a base used as a catalyst in the reaction of isophorone with hydrogen cyanide in the presence of said base, “the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur.”

Applicants respectfully submit that at least the feature of Claims 20, 34 and 38, and the claims depending therefrom, that the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur, is not described or suggested by the cited references, either alone or in combination.

Fischer is drawn to “[a] process for preparing 3-cyano-3,5,5-trimethylcyclohexanone by reacting isophorone with hydrogen cyanide at from 80 to 220° C, in the presence of a catalyst, the reaction is carried out in the presence of the betaine 2,3-dimethylimidazolium-4-carboxylate” (see the Abstract of Fischer). After Fischer’s reacting is carried out, Fischer describes that “[t]o neutralize the reaction product, it is possible to use acids, for example inorganic acids such as phosphoric acid and sulfuric acid or organic acids such as sulfonic acids, e.g., methane sulfonic acid and toluenesulfonic acid, or carboxylic acids, e.g., formic acid, acetic acid, propionic acid, malonic acid, 2-ethylhexanoic acid and adipic acid” (see column 3, lines 47-52, of Fischer).

Fischer does not describe or suggest neutralizing his base in such a way that no sedimenting precipitates occur, a feature of present Claims 20, 34, and 38. In the Examples of Fischer where an acid quench is employed (e.g., Examples 1-3 and Comparative Examples 1-2a), phosphoric acid (e.g., H₃PO₄) is employed as the quenching agent (see columns 3-4, Examples 1-3 and Comparative Examples 1-2a of Fischer). Applicants submit the use of a phosphoric acid as a quenching acid results in the formation of precipitates. For example, in

Comparative Example 1 (not a claimed inventive embodiment) at specification pages 8-9, “the base was neutralized at 50°C with 3.9 g of 75% aqueous phosphoric acid” and “[a] coarsely crystalline solid precipitated out immediately.” Similarly, in Comparative Example 6, (not a claimed inventive embodiment) at specification page 10, “[f]or neutralization, 3.9 g of 75% aqueous phosphoric acid were used” and “[a] coarsely crystalline solid precipitated out immediately.” Thus, Applicants submit all of the Examples of Fischer that employ an acid quench result in precipitative quenching. Further, Fischer describes a variety of acids, *supra*, without distinguishing any of the acids based on their precipitative quenching properties. Accordingly, Fischer does not describe or suggest at least the presently claimed feature that “the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur.” Further, because every acid quench in Fischer’s Examples and Comparative Examples results on precipitation upon quenching, one of ordinary skill in the art would necessarily understand that, according to Fischer, regardless of the quenching acid employed, precipitation would be expected to occur upon quenching.

The Office therefore relies upon Woodbury to remedy the deficiency of Fischer. Woodbury is drawn to “[a] process for the preparation of isophorone nitrile utilizing solutions of lithium hydroxide or lithium cyanide, solid LiOH or solid LiOH•H₂O as a catalyst” (see the Abstract of Woodbury). In Woodbury’s process, “[a] polyacidic acid can be used to acidify the batch, followed by filtration to remove the precipitated lithium salt of the acid...” (see the Abstract of Woodbury). In the Woodbury’s Examples where Woodbury’s lithium catalyst is quenched with an acid (e.g., Examples, 2, 5, and 7-9), precipitations occur that necessitate removal of the precipitated catalyst by filtration (e.g., “the neutralized catalyst was removed by filtration and the batch was vacuum stripped free of isophorone” (see

Example 5, column 9, lines 27-29, of Woodbury). Accordingly, Woodbury does not remedy the deficiency of Fischer because Woodbury does not describe or suggest the present claimed feature that “the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur.”

Applicants respectfully submit the Office has misunderstood the argument, *supra*, especially with regard to Woodbury, as shown by the Office’s comments at page 3 of the Official Action that “[w]ith respect to the argument about the use of filtered porosity paper [in Woodbury], various means of filtering products are available to the skilled artisan.”

Because Fischer and Woodbury, either alone or in combination, do not describe or suggest at least the feature of present Claims 20, 34 and 38, and the claims depending therefrom, that “the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur,” Fischer and Woodbury cannot render obvious the present claims. Withdrawal of the obviousness rejection is respectfully requested on this basis alone.

Additionally, Applicants traverse the obviousness rejection on the basis of a superior and unexpected result. As described *supra*, Fischer and Woodbury do not describe or suggest the presently claimed feature that “the addition of the at least one sulfonic acid neutralizes the base in such a way that no sedimenting precipitates occur.” Specification page 2, lines 22-28, describes in part that “[t]he precipitates formed in the neutralization...can lead to considerable problems...” “[i]n addition, the deposits cause reduced distillation yields...” Because the superior result of increased distillation yields resulting from not forming precipitates upon acid quenching are not described or suggested by Fischer or Woodbury, based on the disclosures of Fischer and Woodbury, the superior result of increased distillation yield is an unexpected result. Applicants submit this superior

and unexpected result is exactly the type of secondary consideration envisioned by the M.P.E.P. to address a *prima facie* case of obviousness. Withdrawal of the obviousness rejection is respectfully requested on this basis alone.

Applicants submit the present application is now in condition for allowance. Early notification to this effect is earnestly solicited.

Respectfully submitted,

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